APPENDIX A: FINAL RULES

Parts 0, 1, 2, 90, and 95 of Title 47 of the Code of Federal Regulations are amended as follows:

I. PART 0 – COMMISSION ORGANIZATION

1. The authority citation for part 0 continues to read as follows:

AUTHORITY: Sec. 5, 48 Stat. 1068, as amended; 47 U.S.C. 155, 225, unless otherwise noted.

2. Section 0.331 is amended as follows:

§ 0.331 Authority delegated.

* * * * *

(d) *Authority concerning rulemaking proceedings.* The Chief, Wireless Telecommunications Bureau shall not have the authority to act upon notices of proposed rulemaking and inquiry, final orders in rulemaking proceedings and inquiry proceedings, and reports arising from any of the foregoing except such orders involving ministerial conforming amendments to rule parts, or orders conforming any of the applicable rules to formally adopted international conventions or agreements where novel questions of fact, law, or policy are not involved. In addition, revisions to the airport terminal use list in § 90.35(c)(61) of this chapter and revisions to the Government Radiolocation list in § 90.371(b) of this chapter need not be referred to the Commission. Also, the addition of new Marine VHF frequency coordination committee(s) to § 80.514 of this chapter need not be referred to the Commission if they do not involve novel questions of fact, policy or law, as well as requests by the United States Coast Guard to:

* * * * *

II. PART 1 – PRACTICE AND PROCEDURE

1. The authority citation for Part 1 continues to read as follows:

AUTHORITY: 47 U.S.C. 47 U.S.C. 151, 154(i), 154(j), 155, 225, 303(r), 309 and 325(e).

2. Paragraph (d) of section 1.946 is amended by adding the following sentence at the end of paragraph (d) as follows:

§ 1.946 Construction and coverage requirements.

* * * * *

(d) * * * This notification requirement is not applicable to authorizations subject to post-license registration requirements under the Dedicated Short-Range Communication Service (DSRCS), subpart M of part 90 of this chapter.

* * * * *

III. PART 2 – FREQUENCY ALLOCATIONS AND RADIO MATTERS; GENERAL RULES AND REGULATIONS

1. The authority citation for Part 2 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

2. Section 2.106, the Table of Frequency Allocations, is amended as follows:

§ 2.106 Table of Frequency Allocations

* * * * *

5650-7250 MHz (SHF) Page 57

International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
5850 – 5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE S5.150	5850 – 5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Amateur Radiolocation S5.150	5850 – 5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Radiolocation S5.150	5650-5925 RADIOLOCATION G2 S5.150 US245	5850 – 5925 FIXED-SATELLITE (Earth-to-space) US245 MOBILE NG160 Amateur S5.150	 ISM Equipment (18) Private Land Mobile (90) Personal Radio Services (95) Amateur (97)

* * * * *

IV. PART 90 – PRIVATE LAND MOBILE RADIO SERVICES

1. The authority citation for Part 90 continues to read as follows:

AUTHORITY: Sections 4(i), 11, 303(g), 303(r) and 332(c)(7) of the Communications Act of 1934, as amended, 47 U.S.C. 154(i), 161, 303(g), 303(r), 332(c)(7).

2. Section 90.7 is amended by revising the definition of "Dedicated Short Range Communications Services" and adding the definitions of "Communications Zone," "On-Board Unit (OBU)," "Roadside Unit (RSU)," and "Roadway bed surface", as follows:

* * * * *

Dedicated Short-Range Communications Services (DSRCS). The use of radio techniques to transfer data over short distances between roadside and mobile units, between mobile units, and between portable and mobile units to perform operations related to the improvement of traffic flow, traffic safety, and other intelligent transportation service applications in a variety of environments. DSRCS systems may also transmit status and instructional messages related to the units involved.

* * * * *

Communications Zone. The service area associated with an individual fixed Roadside Unit (RSU). The communications zone is determined based on the RSU equipment class specified in section 90.375 of this part.

* * * * *

On-Board Unit (OBU). An On-Board Unit is a DSRCS transceiver that is normally mounted in or on a vehicle, or which in some instances may be a portable unit. An OBU can be operational while a vehicle or person is either mobile or stationary. The OBUs receive and contend for time to transmit on one or more radio frequency (RF) channels. Except where specifically excluded, OBU operation is permitted wherever vehicle operation or human passage is permitted. The OBUs mounted in vehicles are licensed by rule under part 95 of this chapter and communicate with Roadside Units (RSUs) and other OBUs. Portable OBUs are also licensed by rule under part 95 of this chapter. OBU operations in the Unlicensed National Information Infrastructure (UNII) Bands follow the rules in those bands.

* * * * *

Roadside Unit (RSU). A Roadside Unit is a DSRC transceiver that is mounted along a road or pedestrian passageway. An RSU may also be mounted on a vehicle or is hand carried, but it may only operate when the vehicle or hand-carried unit is stationary. Furthermore, an RSU operating under this part is restricted to the location where it is licensed to operate. However, portable or hand-held RSUs are permitted to operate where they do not interfere with a site-licensed operation. A RSU broadcasts data to OBUs or exchanges data with OBUs in its communications zone. An RSU also provides channel assignments and operating instructions to OBUs in its communications zone, when required.

Roadway bed surface. For DSRCS, the road surface at ground level.

* * * * *

3. Section 90.20 is amended by inserting the following in the table at paragraph (c)(3) before the entry referencing the 10,550 to 10,680 band, and adding a new paragraph (d)(86) to read as follows:

§ 90.20 Public Safety Pool.

* * * * *

(c) * * * * *

(3) *Frequencies.* * * *

PUBLIC SAFETY POOL FREQUENCY TABLE

Frequency or band	Class of station(s)	Limitations	Coordinator
* * * * *	* * * * *	* * * * *	* * * * *
5850-5925	Base or mobile	86.	Not applicable
* * * * *	* * * * *	* * * * *	* * * * *

* * * * *

(d) * * * * *

(86) Subpart M of this part contains rules for assignment of frequencies in the 5850-5925 MHz band.

4. Section 90.35 is amended by inserting the following in the table at paragraph (b)(3) before the entry referencing the 10,550 to 10,680 band, and adding a new paragraph (c)(90) to read as follows:

§ 90.35 Industrial/Business Pool.

* * * * *

(b) * * * * *

(3) *Frequencies.* * * *

INDUSTRIAL/BUSINESS POOL FREQUENCY TABLE

Frequency or band	Class of station(s)	Limitations	Coordinator
* * * * *	* * * * *	* * * * *	* * * * *
5850-5925	.....do.....	90.	Not applicable
* * * * *	* * * * *	* * * * *	* * * * *

(c) * * * * *

(90) Subpart M of this part contains rules for assignment of frequencies in the 5850-5925 MHz band.

5. Section 90.149 is amended by adding a new paragraph (b) to read as follows:

§ 90.149 License term.

* * * * *

(b) Non-exclusive geographic area licenses for DSRCS Roadside Units (RSUs) in the 5850-5925 MHz band will be issued for a term not to exceed ten years from the date of original issuance or renewal. The registration dates of individual RSUs (see § 90.375 of this part) will not change the overall renewal period of the single license.

* * * * *

6. Section 90.155 is amended by adding a new paragraph (i) to read as follows:

§ 90.155 Time in which station must be placed in operation.

* * * * *

(i) DSRCS Roadside Units (RSUs) in the 5850-5925 MHz band must be placed in operation within 12 months from the date of registration (see § 90.375 of this part) or the authority to operate the RSUs cancels automatically (see § 1.955 of this chapter). Such registration date(s) do not change the overall renewal period of the single license.

* * * * *

7. Section 90.157 is amended as follows:

§ 90.157 Discontinuance of station operation.

(a) A station license shall cancel automatically upon permanent discontinuance of operations. Unless stated otherwise in this part or in a station authorization, for the purposes of this section, any station which has not operated for one year or more is considered to have been permanently discontinued.

(b) For DSRCS Roadside Units (RSUs) in the 5850-5925 MHz band, it is the DSRCS licensee's responsibility to delete from the registration database any RSUs that have been discontinued.

* * * * *

8. Section 90.175(j) is amended by adding a new subparagraph (17) to read as follows:

§ 90.175 Frequency coordination requirements.

* * * * *

(j) The following applications need not be accompanied by evidence of frequency coordination:

* * * * *

(17) Applications for DSRCS licenses (as well as registrations for Roadside Units) in the 5850-5925 GHz band.

* * * * *

9. Section 90.179 is amended by revising paragraph (f) to read as follows:

§ 90.179 Shared use of radio stations.

* * * * *

(f) Above 800 MHz, shared use on a for-profit private carrier basis is permitted only by SMR, Private Carrier Paging, LMS, and DSRCS licensees. See subparts M, P, and S of this part.

* * * * *

10. Section 90.205 is amended by revising paragraph (p) to read as follows:

§ 90.205 Power and antenna height limits.

* * * * *

(p) *5850-5925 MHz.* Power and height limitations are specified in subpart M of this part.

* * * * *

11. Section 90.210 is amended by revising the entry for "5850-5925 MHz" and adding footnote 4 in the table that follows the introductory paragraph, and by revising paragraphs (k)(3) and (k)(4) to read as follows:

§ 90.210 Emission masks.

* * * * *

Applicable Emission Masks

Frequency band (MHz)	Mask for equipment with Audio low pass filter	Mask for equipment without audio low pass filter
* * *		
5850-5925 \4\	---	---

\4\ DSRCS Roadside Units equipment in the 5850-5925 MHz band is governed under subpart M of this part.

* * * * *

(k) * * *

(3) *Other transmitters.* For all other transmitters authorized under subpart M that operate in the 902-928 MHz band, the peak power of any emission shall be attenuated below the power of the highest emission contained within the licensee's sub-band in accordance with the following schedule:

* * * * *

(4) In the 902-928 MHz band, the resolution bandwidth of the instrumentation used to measure the emission power shall be 100 kHz, except that, in regard to paragraph (2) of this section, a minimum spectrum analyzer resolution bandwidth of 300 Hz shall be used for measurement center frequencies with 1 MHz of the edge of the authorized subband. The video filter bandwidth shall not be less than the resolution bandwidth.

* * * * *

12. Section 90.213 is amended by revising footnote 10 to read as follows:

§ 90.213 Frequency stability.

* * * * *

\10\ Except for DSRCS equipment in the 5850-5925 MHz band, frequency stability is to be specified in the station authorization. Frequency stability for DSRCS equipment in the 5850-5925 MHz band is specified in subpart M of this part.

* * * * *

13. Subpart M, is amended by inserting the following heading before Section 90.371 to read as follows:

* * * * *

REGULATIONS GOVERNING THE LICENSING AND USE OF FREQUENCIES IN THE 5850-5925 MHz BAND FOR DEDICATED SHORT-RANGE COMMUNICATIONS SERVICE (DSRCS)

* * * * *

14. Section 90.371 is amended by revising paragraphs (a) and (b) to read as follows:

§ 90.371 Dedicated short-range communications service (DSRCS).

(a) These provisions pertain to systems in the 5850-5925 MHz band for Dedicated Short-Range Communications Service (DSRCS). DSRCS systems use radio techniques to transfer data over short distances between roadside and mobile units, between mobile units, and between portable and mobile units to perform operations related to the improvement of traffic flow, traffic safety, and other intelligent transportation service applications in a variety of environments. DSRCS systems may also transmit status and instructional messages related to the units involved. DSRCS Roadside Units are authorized under this part. DSRCS On-Board Units are authorized under part 95 of this chapter.

(b) DSRCS Roadside Units (RSUs) operating in the band 5850-5925 MHz shall not receive protection from Government Radiolocation services in operation prior to the establishment of the DSRCS station. Operation of DSRCS RSU stations within 75 kilometers of the locations listed in the table below must be coordinated through the National Telecommunications and Information Administration.

* * * * *

(c) NTIA may authorize additional Government Radiolocation services. Once a new Federal assignment is made, the Commission's Universal Licensing System database will be updated, accordingly, to protect the new Federal assignment and the list in paragraph(b) of this section will be updated as soon as practicable.

15. Add § 90.373 to read as follows:

§ 90.373 Eligibility in the DSRCS.

The following entities are eligible to hold an authorization to operate Roadside units in the DSRCS:

(a) Any territory, possession, state, city, county, town or similar governmental entity.

(b) Any entity meeting the eligibility requirements of §§ 90.33 or 90.35 of this part.

16. Add § 90.375 to read as follows:

§ 90.375 RSU license areas, communication zones and registrations

(a) DSRCS Roadside Units (RSUs) in the 5850-5925 MHz band are licensed on the basis of non-exclusive geographic areas. Governmental applicants will be issued a geographic area license based on the geo-political area encompassing the legal jurisdiction of the entity. All other applicants will be issued a geographic area license for their proposed area of operation based on county(s), state(s) or nationwide.

(b) Applicants who are approved in accordance with FCC Form 601 will be granted non-exclusive licenses for all non-reserved DSRCS frequencies (see § 90.377 of this part). Such licenses serve as a prerequisite of registering individual RSUs located within the licensed geographic area described in paragraph (a). Licensees must register each RSU in the Universal Licensing System (ULS) before operating such RSU. RSU registrations are subject, inter alia, to the requirements of § 1.923 of this chapter as applicable (antenna structure registration, environmental concerns, international coordination, and quiet zones). Additionally, RSUs at locations subject to NTIA coordination (see § 90.371(b) of this part) may not begin operation until NTIA approval is received. Registrations are not effective until the Commission posts them on the ULS.

(c) Licensees must operate each RSU in accordance with the Commission's Rules and the registration data posted on the ULS for such RSU. Licensees must register each RSU for the smallest communication zone needed (for the DSRC-based intelligent transportation systems application) using one of the following four communication zones:

RSU Class	Max. Output Power (dBm)[1]	Communications Zone
A	0	15 meters
B	10	100 meters
C	20	400 meters
D	28.8	1000 meters

\1\ The ASTM-DSRC Standard (see § 90.379) limits output power to 28.8 dBm but allows more power to overcome cable losses to the antenna as long as the antenna input power does not exceed 28.8 dBm and the EIRP does not exceed 44.8 dBm. However, specific channels and categories of uses have additional limitations under the ASTM-DSRC Standard.

17. Add § 90.377 to read as follows:

§ 90.377 Frequencies available; maximum EIRP and antenna height, and priority communications.

(a) Licensees shall transmit only the power (EIRP) needed to communicate with an OBU within the communications zone and must take steps to limit the Roadside Unit (RSU) signal within the zone to the maximum extent practicable.

(b) Frequencies available for assignment to eligible applicants within the 5850-5925 MHz band for RSUs and the maximum EIRP permitted for an RSU with an antenna height not exceeding 6 meters above the roadway bed surface are specified in the table below. Where two EIRP limits are given, the higher limit is permitted only for state or local governmental entities.

Channel No.	Frequency Range (MHz)	Max. EIRP[1] (dBm)	Channel Use
170	5850-5855		Reserved
172	5855-5865	33	Service Channel
174	5865-5875	33	Service Channel
175	5865-5885	23	Service Channel[2]
176	5875-5885	33	Service Channel
178	5885-5895	33 / 44.8	Control channel
180	5895-5905	23	Service Channel
181	5895-5915	23	Service Channel[2]
182	5905-5915	23	Service Channel
184	5915-5925	33 / 40	Service Channel

\1\ An RSU may employ an antenna with a height exceeding 6 meters but not exceeding 15 meters provided the EIRP specified in the table above is reduced by a factor of 20 log(Ht/6) in dB where Ht is the height of the radiation center of the antenna in meters above the roadway bed surface. The EIRP is measured as the maximum EIRP toward the horizon or horizontal, whichever is greater, of the gain associated with the main or center of the transmission beam. The RSU antenna height shall not exceed 15 meters above the roadway bed surface.

\2\ Channel Nos. 174/176 may be combined to create a twenty megahertz channel, designated Channel No. 175. Channels 180/182 may be combined to create a twenty-megahertz channel, designated Channel No. 181.

(c) Except as provided in paragraphs (d) and (e), non-reserve DSRCS channels are available on a shared basis only for use in accordance with the Commission's Rules. All licensees shall cooperate in the selection and use of channels in order to reduce interference. This includes monitoring for communications in progress and any other measures as may be necessary to minimize interference. Licensees of RSUs suffering or causing harmful interference within a communications zone are expected to cooperate and resolve this problem by mutually satisfactory arrangements. If the licensees are unable to do so, the Commission may impose restrictions including specifying the transmitter power, antenna height and direction, additional filtering, or area or hours of operation of the stations concerned. Further the use of any channel at a given geographical location may be denied when, in the judgment of the Commission, its use at that location is not in the public interest; the use of any channel may be restricted as to specified geographical areas, maximum power, or such other operating conditions, contained in this part or in the station authorization.

(d) *Safety/public safety priority.* The following access priority governs all DSRCS operations:

(1) communications involving the safety of life have access priority over all other DSRCS communications;

(2) subject to a Control Channel priority system management strategy (see ASTM E2213-03 DSRC Standard at § 4.1.1.2(4)) DSRCS communications involving public safety have access priority over all other DSRC communications not listed in paragraph (d)(1). Roadside Units (RSUs) operated by state or local governmental entities are presumptively engaged in public safety priority communications.

(e) *Non-priority communications.* DSRCS communications not listed in paragraph (d) are non-priority communications. If a dispute arises concerning non-priority communications, the licensee of the later-registered RSU must accommodate the operation of the early registered RSU, *i.e.*, interference protection rights are date-sensitive, based on the date that the RSU is first registered (see § 90.375 of this part) and the later registered RSU must modify its operations to resolve the dispute in accordance with paragraph (f).

(f) Except as otherwise provided in the ASTM-DSRC Standard (see § 90.379 of this part) for the purposes of paragraph (e) objectionable interference will be considered to exist when the Commission receives a complaint and the difference in signal strength between the earlier-registered RSU and the later-registered RSU (anywhere within the earlier-registered RSU's communication zone) is 18 dB or less (co-channel). Later-registered RSUs causing objectionable interference must correct the interference immediately unless written consent is obtained from the licensee of the earlier-registered RSU.

18. Add § 90.379 to read as follows:

§ 90.379 ASTM E2213-03 DSRC Standard (ASTM-DSRC Standard).

Roadside Units operating in the 5850-5925 MHz band shall comply with the following technical standards, which are incorporated by reference: American Society for Testing and Materials (ASTM) E2213-03, Standard Specification for Telecommunications and Information Exchange Between Roadside and Vehicle Systems – 5 GHz Band Dedicated Short Range Communications (DSRC) Medium Access Control (MAC) and Physical Layer (PHY) Specifications published September 2003 (ASTM E2213-03 DSRC Standard). The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 C.F.R. part 51. Copies may be inspected at the Federal Communications Commission, 445 12th Street, SW, Washington, DC 20554 or at the Office of the Federal Register, 800 N. Capitol Street, NW, Washington, DC. Copies of the ASTM E2213-03 DSRC Standard can be obtained from ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. Copies may also be obtained from ASTM via the Internet at http://www.astm.org.

19. Add Section 90.383 to read as follows:

§ 90.383 RSU sites near the U.S./Canada or U.S./Mexico border.

Until such time as agreements between the United States and Canada or the United States and Mexico, as applicable, become effective governing border area use of the 5850-5925 MHz band for DSRCS, authorizations to operate Roadside Units (RSUs) are granted subject to the following conditions:

(a) RSUs must not cause harmful interference to stations in Canada or Mexico that are licensed in accordance with the international table of frequency allocations for Region 2 (see § 2.106 of this chapter) and must accept any interference that may be caused by such stations.

(b) Authority to operate DSRCS Roadside Units is subject to modifications and future agreements between the United States and Canada or the United States and Mexico, as applicable.

20. Section 90.425(d) is amended by adding a new paragraph (10) to read as follows:

§ 90.425 Station identification.

* * * * *

(d) * * *

(10) It is a Roadside Unit in a DSRCS system.

* * * * *

V. PART 95 – PERSONAL RADIO SERVICES

1. The authority citation for Part 95 continues to read as follows:

AUTHORITY: Sections 4, 303, 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303.

2. Section 95.401 is amended by adding a new paragraph (g) to read as follows:

§ 95.401 (CB Rule 1) What are the Citizens Band Radio Services?

* * * * *

(g) Dedicated Short-Range Communications Service On-Board Units (DSRCS-OBUs). The rules for this service are contained in subpart L of this part. DSRCS-OBUs may communicate with DSRCS Roadside Units (RSUs), which are authorized under part 90 of this chapter. DSRCS, RSU, and OBU are defined in § 90.7 of this chapter.

* * * * *

3. Section 95.601 is amended to read as follows:

§ 95.601 Basis and purpose.

This section provides the technical standards to which each *transmitter* (apparatus that converts electrical energy received from a source into RF (radio frequency) energy capable of being radiated) used or intended to be used in a station authorized in any of the Personal Radio Services must comply. This section also provides requirements for obtaining certification for such transmitters. The Personal Radio Services are the GMRS (General Mobile Radio Service) -- subpart A, the Family Radio Service (FRS) -- subpart B, the R/C (Radio Control Radio Service) -- subpart C, the CB (Citizens Band Radio Service) -- subpart D, the Low Power Radio Service (LPRS) -- subpart G, the Wireless Medical Telemetry Service (WMTS) -- subpart H, the Medical Implants Communication Service (MICS) -- subpart I, the Multi-Use Radio Service (MURS) -- subpart J, and Dedicated Short-Range Communications Service On-Board Units (DSRCS-OBUs) – subpart L.

4. Section 95.603 is amended by adding a new paragraph (h) to read as follows:

§ 95.603 Certification required.

* * * * *

(h) Each Dedicated Short-Range Communications Service On-Board Unit (DSRCS-OBU) that operates or is intended to operate in the DSRCS (5.850-5.925 GHz) must be certified in accordance with subpart L of this part and subpart J of part 2 of this chapter.

5. Section 95.605 is amended to read as follows:

§ 95.605 Certification procedures.

Any entity may request certification for its transmitter when the transmitter is used in the GMRS, FRS, R/C, CB, IVDS, LPRS, MURS, or MICS following the procedures in part 2 of this chapter. Medical implant transmitters shall be tested for emissions and EIRP limit compliance while enclosed in a medium that simulates human body tissue in accordance with the procedures in § 95.639(g). Frequency stability testing for MICS transmitters shall be performed over the temperature range set forth in § 95.628. Dedicated Short-Range Communications Service On-Board Units (DSRCS-OBUs) must be certified in accordance with subpart L of this part and subpart J of part 2 of this chapter.

6. Section 95.631 is amended by adding a new paragraph (k) to read as follows:

§ 95.631 Emission types.

* * * * *

(k) DSRCS-OBUs are governed under subpart L of this part.

7. Section 95.633 is amended by adding a new paragraph (g) to read as follows:

§95.633 Emission bandwidth.

* * * * *

(g) DSRCS-OBUs are governed under subpart L of this part.

8. Section 95.635 is amended by adding a DSRC-OBU designation to the Table and a new paragraph (f) to read as follows:

§ 95.635 Unwanted radiation.

(a) * * *

(b) * * *

Transmitter	Emission type	Applicable paragraphs (b)
* * * * *	* * * * *	* * * * *
DSRCS-OBU	As specified in paragraph (f)	

* * * * *

(f) DSRCS-OBUs are governed under subpart L of this part.

9. Section 95.637 is amended by adding a new paragraph (f) to read as follows:

§ 95.637 Modulation standards.

* * * * *

(f) DSRCS-OBUs are governed under subpart L of this part.

10. Section 95.639 is amended by adding a new paragraph (i) to read as follows:

§ 95.639 Maximum transmitter power.

* * * * *

(i) DSRCS-OBUs are governed under subpart L of this part, except the maximum output power for portable DSRCS-OBUs is 1.0 mW. For purposes of this paragraph, a portable is a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user.

11. Add Section 95.643 below the existing heading "CERTIFICATION REQUIREMENTS" to read as follows:

§ 95.643 DSRCS-OBU certification.

Sections 95.645 through 95.655 do not apply to certification of DSRCS-OBUs. DSRCS-OBUs must be certified in accordance with subpart L of this part and subpart J of part 2 of this chapter.

12. Part 95 is amended by adding a new Subpart L to read as follows:

Subpart L –Dedicated Short-Range Communications Service On-Board Units (DSRCS-OBUs)

§ 95.1501 Scope.

This subpart sets out the regulations governing Dedicated Short-Range Communications Service On-Board Units (DSRCS-OBUs) in the 5850-5925 MHz band. DSRCS Roadside Units (RSUs) are authorized under part 90 of this chapter and DSRCS, RSU, and OBU are defined in § 90.7 of this chapter.

§ 95.1503 Eligibility.

All entities for which the Commission has licensing authority are authorized by rule to operate an FCC certified On-Board Unit in accordance with the rules contained in this subpart. No individual FCC license will be issued. (The FCC does not have authority to license foreign governments or their representatives, nor stations belonging to and operated by the United States Government.)

§ 95.1505 Authorized locations.

Operation of DSRCS On-Board Units is authorized anywhere CB station operation is permitted under § 95.405.

§ 95.1507 Station Identification.

A DSRCS On-Board Unit is not required to transmit an FCC station identification announcement.

§ 95.1509 ASTM E2213-03 DSRC Standard.

On-Board Units operating in the 5850-5925 MHz band shall comply with the following technical standards, which are incorporated by reference: American Society for Testing and Materials (ASTM) E2213-03, Standard Specification for Telecommunications and Information Exchange Between Roadside and Vehicle Systems – 5 GHz Band Dedicated Short Range Communications (DSRC) Medium Access Control (MAC) and Physical Layer (PHY) Specifications published September 2003 (ASTM E2213-03 DSRC Standard). The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 C.F.R. part 51. Copies may be inspected at the Federal Communications Commission, 445 12th Street, SW, Washington, DC 20554 or at the Office of the Federal Register, 800 N. Capitol Street, NW, Washington, DC. Copies of the ASTM E2213-03 DSRC Standard can be obtained from ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. Copies may also be obtained from ASTM via the Internet at http://www.astm.org.

§ 95.1511 Frequencies available.

(a) The following table indicates the channel designations of frequencies available for assignment to eligible applicants within the 5850-5925 MHz band for On-Board Units (OBUs):[1]

Channel No.	Channel Use	Frequency Range (MHz)
170	Reserved	5850-5855
172	Service Channel	5855-5865
174	Service Channel	5865-5875
175	Service Channel [2]	5865-5885
176	Service Channel	5875-5885
178	Control channel	5885-5895
180	Service Channel	5895-5905
181	Service Channel [2]	5895-5915
182	Service Channel	5905-5915
184	Service Channel	5915-5925

\1\ The maximum output power for portable DSRCS-OBUs is 1.0 mW. See § 95.639(i).

\2\ Channel Nos. 174/176 may be combined to create a twenty megahertz channel, designated Channel No. 175. Channels 180/182 may be combined to create a twenty-megahertz channel, designated Channel No. 181.

(b) Except as provided in paragraph (c), non-reserve DSRCS channels are available on a shared basis only for use in accordance with the Commission's Rules. All licensees shall cooperate in the selection and use of channels in order to reduce interference. This includes monitoring for communications in progress and any other measures as may be necessary to minimize interference. Licensees suffering or causing harmful interference within a communications zone are expected to cooperate and resolve this problem by mutually satisfactory arrangements. If the licensees are unable to do so, the Commission may impose restrictions including specifying the transmitter power, antenna height and direction, additional filtering, or area or hours of operation of the stations concerned. Further

the use of any channel at a given geographical location may be denied when, in the judgment of the Commission, its use at that location is not in the public interest; the use of any channel may be restricted as to specified geographical areas, maximum power, or such other operating conditions, contained in this part or in the station authorization.

(c) *Safety/public safety priority.* The following access priority governs all DSRCS operations:

(1) communications involving the safety of life have access priority over all other DSRCS communications;

(2) subject to a Control Channel priority system management strategy (see ASTM E2213-03 DSRC Standard at § 4.1.1.2(4)) DSRCS communications involving public safety have access priority over all other DSRC communications not listed in paragraph (c)(1). On-Board Units (OBUs) operated by state or local governmental entities are presumptively engaged in public safety priority communications.

(d) *Non-priority communications.* DSRCS communications not listed in paragraph (c) are non-priority communications. If a dispute arises concerning non-priority DSRCS-OBU communications with Roadside Units (RSUs), the provisions of §§ 90.377(e) and (f) of this chapter will apply. Disputes concerning non-priority DSRCS-OBU communications not associated with RSUs are governed by paragraph (b) of this section.

APPENDIX B

FINAL REGULATORY FLEXIBILITY ANALYSIS

As required by the Regulatory Flexibility Act (RFA),[1] an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *Notice of Proposed Rule Making* (*NPRM*).[2] The Commission sought written public comment on the proposals in the *NPRM*, including comment on the IRFA. No comments were submitted specifically in response to the IRFA; we nonetheless discuss certain general comments below. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.[3]

Need for, and Objectives of, the Proposed Rules

In this *Report and Order*, we adopt licensing, service, and operating rules for the 5.850-5.925 GHz band for use by Dedicated Short Range Communications (DSRC) Services in the provision of Intelligent Transportation Systems (ITS) services. DSRC communications are used for the wireless transfer of data over short distances between roadside and mobile units, between mobile units, and between portable and mobile units to perform operations related to the improvement of traffic flow, traffic safety, and other intelligent transportation service applications in a variety of environments. This action is taken in response to the Transportation Equity Act for the 21st Century,[4] which requires the Commission, in consultation with the Secretary of the United States Department of Transportation (DOT), to consider the spectrum needs for DSRC. This action will assist DOT's goal of using advanced electronics and technology to increase the safety and efficiency of the nation's surface transportation system.

Summary of Significant Issues Raised by Public Comments in Response to the IRFA:

No comments were submitted specifically in response to the IRFA. Generally, the comments supported permitting both public safety and non-public safety uses in the 5.9 GHz band, with non-public safety uses secondary. Commenters supported the adoption of the ASTM-DSRC Standard into the Commission's Rules. They further supported site-based licensing, frequency coordination, and the use of the Universal Licensing System.

Description and Estimate of the Number of Small Entities To Which the Proposed Rules Will Apply

The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.[5] The RFA defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and

[1] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. §§ 601-612, has been amended by the Contract With America Advancement Act of 1996, Pub. L. No. 104-121, 110 Stat. 847 (1996) (CWAAA). Title II of the CWAAA is the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA).

[2] Amendment of the Commission's Rules Regarding Dedicated Short-Range Communication Services in the 5.850-5.925 GHz Band (5.9 GHz Band), *Notice of Proposed Rulemaking*, WT Docket No. 01-90, 17 FCC Rcd 23136, 23185 (Appendix A) (2002).

[3] *See* 5 U.S.C. § 604. We note that we could also certify this action under the RFA, see 5 U.S.C. § 605.

[4] Transportation Equity Act for the 21st Century, Pub. L. 105-178, 112 Stat. 107 (1998) (TEA-21).

[5] 5 U.S.C. § 603(b)(3).

"small governmental jurisdiction."[6] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[7] A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[8] A small organization is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."[9] Nationwide, as of 1992, there were approximately 275,801 small organizations.[10] The term "small governmental jurisdiction" is defined as "governments of cities, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand."[11] As of 1997, there were about 87,453 governmental jurisdictions in the United States.[12] This number includes 39,044 county governments, municipalities, and townships, of which 37,546 (approximately 96.2%) have populations of fewer than 50,000, and of which 1,498 have populations of 50,000 or more. Thus we estimate the number of small governmental jurisdictions overall to be 84,098 or fewer.

The rules we adopt today will affect users of public safety radio services. These rules may also affect manufacturers of radio communications equipment. An analysis of the number of small businesses that may be affected follows. We also note that nationwide, there are approximately 22.4 million small businesses, total, according to the SBA data.13

Small Businesses Sharing Spectrum with Public Safety Radio Services and Governmental Entities. As a general matter, Public Safety Radio Services include police, fire, local government, forestry conservation, highway maintenance, and emergency medical services.[14] Private entities that using

[6] 5 U.S.C. § 601(6).

[7] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in 15 U.S.C. 632). Pursuant to the RFA, the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register." 5 U.S.C. § 601(3).

[8] Small Business Act, 15 U.S.C. § 632 (1996).

[9] 5 U.S.C. § 601(4).

[10] 1992 Economic Census, U.S. Bureau of the Census, Table 6 (special tabulation of data under contract to Office of Advocacy of the U.S. Small Business Administration).

[11] 5 U.S.C. 601(5).

[12] U.S. Census Bureau, Statistical Abstract of the United States: 2000, Section 9, pages 299-300, Tables 490 and 492.

[13] See SBA, *Programs and Services*, SBA Pamphlet no. CO-0028, at page 40 (July 2002).

[14] *See* Subparts A and B of Part 90 of the Commission's Rules, 47 C.F.R. §§ 90.1-90.22. Police licensees include 26,608 licensees that serve state, county, and municipal enforcement through telephony (voice), telegraphy (code), and teletype and facsimile (printed material). Fire licensees include 22,677 licensees comprised of private volunteer or professional fire companies, as well as units under governmental control. Public Safety Radio Pool licensees also include 40,512 licensees that are state, county, or municipal entities that use radio for official purposes. There are also 7,325 forestry service licensees comprised of licensees from state departments of conservation and private forest organizations that set up communications networks among fire lookout towers and ground crews. The 9,480 state and local governments are highway maintenance licensees that provide emergency and routine communications to aid other public safety services to keep main roads safe for vehicular traffic. Emergency medical licensees (1,460) use these channels for emergency medical service communications related to the delivery of emergency medical treatment. Another 19,478 licensees include medical services, rescue (continued....)

DSRC-based ITS applications may be licensed in the 5.9 GHz band on a secondary basis to public safety radio services.

Wireless Service Providers. The SBA has developed a small business size standard for wireless small businesses within the two separate categories of Paging15 and Cellular and Other Wireless Telecommunications. 16 Under both SBA categories, a wireless business is small if it has 1,500 or fewer employees. According to the Commission's most recent data,17 1,761 companies reported that they were engaged in the provision of wireless service. Of these 1,761 companies, an estimated 1,175 have 1,500 or fewer employees and 586 have more than 1,500 employees.18 Consequently, the Commission estimates that most wireless service providers are small entities that may be affected by the rules and policies adopted herein.

The Commission has not developed a definition of small entities specifically applicable to Dedicated Short-Range Communications Manufacturers (DSRC Manufacturers). However, the SBA has established a small business size standard for Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing. Under this standard, firms are considered small if they have 750 or fewer employees.[19] Census data for 1997 indicate that, for that year, there were a total of 1,215 establishments[20] in this category.[21] Of those, there were 1150 that had employment under 500, and an additional 37 that had employment of 500 to 999. The percentage of wireless equipment manufacturers to total manufacturers in this category is approximately 61.35%,[22] so we estimate that the number of wireless equipment manufacturers with employment under 500 was actually closer to 706, with an additional 23 establishments having employment of between 500 and 999. Given the above, we estimate that the majority of wireless communications equipment manufacturers are small.

(Continued from previous page)
organizations, veterinarians, handicapped persons, disaster relief organizations, school buses, beach patrols, establishments in isolated areas, communications standby facilities, and emergency repair of public communications facilities.

[15] 13 C.F.R. § 121.201, North American Industry Classification System (NAICS) code 513321 (changed to 517211 in October 2002).

[16] 13 C.F.R. § 121.201, North American Industry Classification System (NAICS) code 513322 (changed to 517212 in October 2002).

[17] FCC, Wireline Competition Bureau, Industry Analysis and Technology Division, Trends in Telephone Service, Table 5.3, (May 2002).

[18] *Id.*

[19] 13 C.F.R. § 121.201, NAICS code 334220.

[20] The number of "establishments" is a less helpful indicator of small business prevalence in this context than would be the number of "firms" or "companies," because the latter take into account the concept of common ownership or control. Any single physical location for an entity is an establishment, even though that location may be owned by a different establishment. Thus, the numbers given may reflect inflated numbers of businesses in this category, including the numbers of small businesses. In this category, the census breaks-out data for firms or companies only to give the total number of such entities for 1997, which was 1,089.

[21] U.S. Census Bureau, 1997 Economic Census, Industry Series: Manufacturing, "Industry Statistics by Employment Size," Table 4, NAICS code 334220 (issued Aug. 1999).

[22] *Id.* Table 5, "Industry Statistics by Industry and Primary Product Class Specialization: 1997."

Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements

Applicants for licenses to provide DSRC operations in the 5.9 GHz band those licensees must submit license applications through the Universal Licensing System using Form 601, and follow the service rules at 47 C.F.R. Part 90.[23] These licenses are not subject to spectrum auctions although, they will be subject to licensing and regulatory fees.

Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

The RFA requires an agency to describe any significant alternatives that it has considered in reaching its determinations, which may include the following four alternatives, among others: (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for small entities.[24]

Regarding our decision to permit open eligibility for licensing in the 5.9 GHz, *see* paras. 50-51, *supra*, we do not believe that there will be any significant effect on small entities. Any interested and qualified entity may apply for a license.

Regarding our decision to use non-exclusive geographic area licensing, *see* paras. 57-59, *supra*, we do not believe that there will be any significant adverse effect on small entities. We believe that this licensing approach will actually benefit small entities by enabling them to obtain licenses to provide a DSRC service. We further believe this decision benefits small entities by eliminating the costs associated with frequency coordination. Because of the short range of this service (less than 1000 meters), resulting in relatively lower costs, we believe that small entities will be attracted to this service.

Regarding our decision to require the use of the ASTM-DSRC Standard, *see* paras. 18-22, *supra*, we do not believe that there will be any adverse effect on small entities. We believe that this decision will benefit small entities. We required the ASTM-DSRC Standard for all DSRC operations in the 5.9 GHz band, which we anticipate will, in turn, reduce the cost of the DSRC devices.

[23] *See* 47 C.F.R. § 1.913(a)(1).

[24] *See* 5 U.S.C. § 603(c).

Report to Congress

The Commission will send a copy of this *Report and Order*, including this FRFA, in a report to be sent to Congress pursuant to the Congressional Review Act.[25] In addition, the Commission will send a copy of this *Report and Order*, including this FRFA, to the Chief Counsel for Advocacy of the Small Business Administration. A copy of this *Report and Order* and FRFA (or summaries thereof) will also be published in the Federal Register.[26]

[25] *See generally,* 5 U.S.C. § 801 (a)(1)(A).

[26] *See* 5 U.S.C. § 604(b).

APPENDIX C

List of DSRC-based ITS Applications
(Eight User Service Bundles Identified by the National Architecture)

The eight safety related service bundles identified by the National Architecture are as follows:

Travel and Traffic Management, comprised of

- Probe Data Collection
- Traffic Information

Maintenance Construction Operations, comprised of

- In-Vehicle Signing
  - Work Zone Warning
  - Highway/Rail Intersection Warning
  - Road Condition Warning

Public Transit Management, comprised of

- Transit Vehicle Data Transfer (gate and yard)
- Transit Vehicle Signal Priority

Electronic Payment, comprised of

- Toll Collection
- Gas Payment
- Drive-Thru Payment
- Rental Car Processing
- Parking Lot Payment

Commercial Vehicle Operations (CVO), comprised of

- Main Screening
- Border Clearance
- CVO Driver's Daily Log
- Unique CVO Fleet Management
- CVO Truck Stop Data Transfer

Emergency Management, comprised of

- In-Vehicle Signing
  - Work Zone Warning
  - Highway/Rail Intersection Warning
  - Road Condition Warning
- On-Board Safety Data Transfer
- Vehicle Safety Inspection
- Emergency Vehicle Video Relay
- Emergency Vehicle Approach Warning

Advanced Vehicle Safety Systems, comprised of

- Intersection Collision Avoidance
- Road Departure
- Lane Merge
- In-Vehicle Signing
  - Work Zone Warning
  - Highway/Rail Intersection Warning
  - Road Condition Warning
- Vehicle-to-Vehicle
  - Vehicle Stopped or Slowing
  - Vehicle/Vehicle Collision Avoidance
  - Imminent Collision Warning
- Rollover Warning
- Low Bridge Warning

Information Management comprised of

- Main Screening
- Border Clearance
- Access Control Rental Car Processing
- Unique CVO Fleet Management
- CVO Truck Stop Data Transfer
- Locomotive Fuel Monitoring
- Locomotive Data Transfer

APPENDIX D

LIST OF COMMENTERS

Comments

3M
Alliance of Automobile Manufacturers
American Association of State Highway and Transportation Officials
ARINC Incorporated
Association of American Railroads
BD Industries
BMW Group
Delaware Department of Transportation
E-470 Public Highway Authority
E-Z Pass Interagency Group
Highway Electronics
Intelligent Transportation Society of America
International Bridge, Tunnel & Turnpike Association
International Municipal Signal Association
Intersil Corporation
Johns Hopkins University, Applied Physics Laboratory
Maine Turnpike Authority
Mark IV Industries, LTD, I.V.H.S. Division
MTA Bridges and Tunnels
National Assoc. of Telecommunications Officers and Advisors/National League of Cities
National Emergency Number Association
Nissan North America, Inc.
National Radio Astronomy Observatory
National Telecommunications and Information Administration
New York State Thruway Authority
North Texas Tollway Authority
PanAmSat
Port Authority of New York and New Jersey-Tunnels, Bridges, & Terminals Department
Public Safety Wireless Network
Siemens Transportation System
Sirit Technologies
Texas Department of Transportation
TransCore, LP
United States Department of Transportation
University of California, Davis-AHMCT Research Center

Reply Comments

Alliance of Automobile Manufacturers
Association of International Automobile Manufacturers, Inc., Technical Affairs Comm.
E-Z Pass Interagency Group
Florida Department of Transportation
Intelligent Transportation Society of America
Intersil Corporation
Mark IV Industries, Ltd., I.V.H.S. Division
MTA Bridges and Tunnels
OmniAir Consortium, Inc.
Public Safety Wireless Network
QUALCOMM Incorporated
Satellite Industry Association
TransCore, LP

APPENDIX E

ASTM 5.9 GHz DSRC STANDARDS WRITING GROUP PARTICIPANTS

3-M
AASHTO
Acunia
Amtech
ARINC
Armstrong Consulting
Atheros
Caltrans
Diamler-Chrysler
Denso
GM
GTRI
Highway Electronics
Hitachi
IDMICRO
IMEC
Intersil
Intelligent Transportation Society of America
Johns Hopkins University, Applied Physics Laboratory
King County Metro Transit
Mark IV Industries, LTD, I.V.H.S. Division
MiCom Spa
Michigan Department of Transportation
Mitretek
Motorola
Nissan
New York State Thruway Authority
OKI Electric
PATH
Raytheon
Sirit Technologies
Sumitomo Electric
Technocom
Toshiba
TransCore, LP
Visteon
Washington State Department of Transportation
Wi-Lan

APPENDIX F

Roadside Units -- REGISTRATION DATA

Fields

1. Call sign
2. Licensee name
3. RSU identification number
4. RSU site coordinates
5. Channel number(s)
6. Equipment class
7. Power
8. Antenna height
9. Antenna manufacturer & model
10. Antenna gain
11. Antenna azimuth
13. Antenna elevation angle
14. Registration date

SEPARATE STATEMENT OF
CHAIRMAN MICHAEL K. POWELL

Re: In re Amendment of the Commission's Rules Regarding Dedicated Short-Range Communication Services in the 5.850-5.925 GHz Band (5.9 GHz Band) (WT Docket No. 01-90); and Amendment of Parts 2 and 90 of the Commission's Rules to Allocate the 5.850-5.925 GHz Band to the Mobile Service for Dedicated Short Range Communications of Intelligent Transportation Services (ET Docket No. 98-95, RM-9096) (Adopted December 17, 2003)

Smart radio technology means smarter highways, safer roads and a more secure homeland. By our action today, the Commission takes a giant step toward ensuring that all Americans have access to these life saving services provided through advanced telecommunications platforms. The Commission also demonstrates its continued commitment to assisting the United States Department of Transportation (DOT) in improving the safety and efficiency of the nation's surface transportation infrastructure through the use of Dedicated Short Range Communications (DSRC) Service in the 5.9 GHz band. DSRC provides critical communications links for Intelligent Transportation Systems (ITS) systems, and is essential to achieving a top priority of the DOT, reducing highway fatalities.

Specifically, in this *ITS Report and Order*, the Commission adopts the interoperability standard (ASTM E2213-02 or "ASTM-DSRC) supported overwhelmingly by the commenters and developed through an accredited standard setting process. The Report and Order makes it possible to license both public safety and non-public safety use of the 5.9 GHz band and will provide for open eligibility for licensing and technical rules, most of which are embodied in the standard. The Commission will also license DSRC Roadside Units (RSUs) that will receive non-exclusive geographic-area licenses utilizing seventy megahertz of the 5.9GHz band and will help provide a framework that ensures priority for public safety communications. Finally, although significant progress has been made in the industry discussion protocol regarding the sharing of DSRC and FSS operations in the 5.9 GHz band, the Commission has deferred a decision on the matter until the ongoing technical studies and industry discussions are completed. Give the importance of public safety applications in the DSRC, I urge the parties to conclude their discussions to ensure that the ASTM-DSRC Standard will provide reliable and robust operations.

I would like to thank the staffs of the National Telecommunications and Information Administration under the leadership of Michael D. Gallagher, Acting Assistant Secretary of Commerce for Communications and Information, and the Department of Transportation, headed by Norman Y. Mineta, Secretary of Transportation, for working closely with us to develop rules that will bring the benefits of this technology to our citizens.

SEPARATE STATEMENT OF
COMMISSIONER JONATHAN S. ADELSTEIN

Re: *In re Amendment of the Commission's Rules Regarding Dedicated Short-Range Communication Services in the 5.8250-5.925 GHz Band (5.9 GHz Band); WT Docket No. 01-90*

Today's Order represents another important step in improving the safety and efficiency of our Nation's surface transportation system. I am very pleased to support any role the Commission can play in reducing the more than six million crashes and over 43,000 deaths experienced each year in this country. The potential of dedicated short-range communications services is enormous. I am optimistic that the rules we adopt today will further enable the wide-scale and interoperable deployment of these systems in the near future.

Our item today is particularly noteworthy because it reflects the continued collaborative approach between all sectors of the government and the automotive industry. The Department of Transportation and ITS America in particular have played a leading role in the development of Intelligent Transportation Systems (ITS). I am pleased that we are able to continue these efforts by adopting the ASTM-DSRC Standard. This also helps fulfill the laudable goal of the Transportation Equity Act for the 21st Century (TEA-21) to promote interoperability of ITS systems across the United States. I had the privilege of working on TEA-21 when I was a staffer in the Senate so it is particularly exciting for me to oversee implementation of the Act from this position.

Finally, I am also pleased that the item acknowledges the ongoing discussions between NTIA and DOT and between the Satellite Industry Association and ITS America regarding potential interference to current and future operations in and around the 5.9 GHz band. As touched on above, the development of DSRC systems really is a cooperative and ongoing effort. I commend the parties for their continued discussions on how best to resolve potential interference issues, and look forward to hearing the results of their studies and collaborations.